Centro Para Prevenção da Poluição (C3P)
(Center for Pollution Prevention)

International Pollution Prevention Workshop

TAP/OGMA

Pollution Prevention through Partnership

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❑ Genesis of TAP/OGMA Projects

→ Meetings with Technical and Managerial staff
→ Facility Walkthroughs

TAP – *Air Portugal*
OGMA – *Indústria Aeronáutica de Portugal*

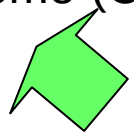
Evaluate industrial process for existing Hazardous Materials and determine potential joint TAP/OGMA Projects.

Areas of interest at TAP/OGMA

⇨ Reduction/Elimination of Hexavalent Chrome in conversion coatings and primers
⇨ Reduction/Elimination of VOC emissions from coating, depainting and cleaning operations

Selected Projects

1. Identification of Suitable Alternatives to Hexavalent Chrome (Cr^{+6}) in Conversion Coating Alodine 1200/1000 on Al 2024, 7075 and 6061;

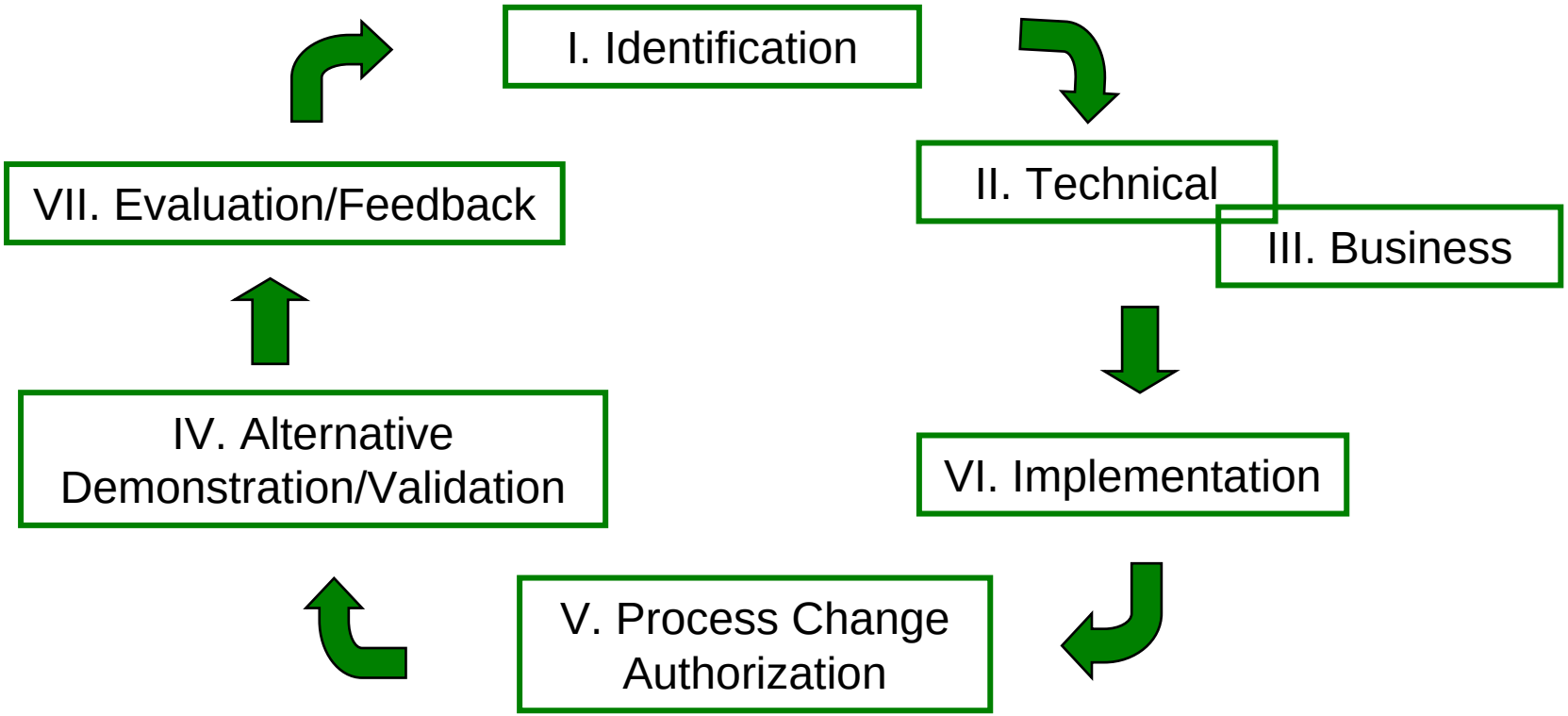


2. Replacement of High VOC Coatings for Aircraft Painting, and in General Painting scheme;

3. Demonstration/Validation of Alternatives to Chrome and Cadmium Plating on Fasteners and Engine Components; Landing Gear, Turbine Fans;

4. Demonstration/Validation of Suitable Alternatives to Hexavalent Chrome (Cr^{+6}) in Primer Coatings (AL 2024, 7075, 6061).

❑ C3P Project Methodology



C3P Project Methodology

I. Identification

-Pollution Prevention needs and the Engineering Process owners are identified;
-Potential Projects are developed;
-Partners participation is critical to the continuation of any identified project.

II. Technical

-Identification of technical requirements;
-Identification of potential alternatives;
-Development of technical documents: *Joint Test Protocol* (JTP)
Potential Alternative Report (PAR)

III. Business

-Develop business strategy that identifies funding for testing and implementation;
-Perform a Cost/Benefit Analysis (CBA) to:
- support funding requirements;
- determine cost implications;
- determine environmental quality benefits;
- determine magnitude of change.

IV. Alternative Demonstration/Validation

-Perform required tests in accordance with the approved JTP;
-Analyze the data and determine acceptability;
-Document the results in a *Joint Test Report* (JTR).

C3P Project Methodology

V. Process Change Authorization

Technical performance of potential alternatives is demonstrated and determine to be acceptable

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Approve of the Engineering technical authorities

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Implementation of the alternative materials/processes into manufacturing

VI. Implementation

Implementation of the alternative materials/processes into the manufacturing and maintenance operations

VII. Evaluation/Feedback

Technical conclusions of the project

Generate potential new project ideas

New project ideas → **Start Phase I - Identification**

❑ Project Framework/Membership

▪ Project Steering Committee

⇨Charged with the overall direction of projects
⇨Constituted by a senior level of Engineers

TAP – *Air Portugal*
OGMA – *Indústria Aeronáutica de Portugal*
ISQ – *Instituto de Soldadura e Qualidade*
INEGI – *Instituto de Engenharia Mecânica e Gestão Industrial*
NASA AP2 Program

▪ Project Working Group

Technical and managerial support for Joint C3P, TAP/OGMA Projects

Project Framework/Membership

- **Project Team**

➡ **Project Integrator** ⇨ C3P Engineer ⇨ Managing the project

➡ **Technical/Operational Stakeholders**

Engineering representatives of the process owners

⇩

Responsibility to ensure that alternatives are appropriately reviewed and tested before implementation

TAP/OGMA Engineers

Project Framework/Membership

Environmental, Safety and Health Stakeholders

⇉ Ensure that the Environmental, Safety and Health requirements are addressed in the project.

⇉ Alternative material/technology have no adverse effects on employees, the environment or the public.

Technical Support

Review tests reports and provide technical guidance

ISQ, INEGI and C3P Membership

Project Framework/Membership

Client Representative

Ensure that materials are approved in accordance with industry standards

Client participation is important

Approval of the new materials/processes

❑ Project Status and Accomplishments

➡ **Identification of Suitable Alternatives to Hexavalent Chrome (Cr^{+6}) in Conversion Coating Alodine 1200/1000 on Aluminum 2024, 7075, and 6061**

Objective { Test/Implement Alternatives to chrome conversion coating in aircraft processing operations at *TAP-Air Portugal* and *OGMA – Indústria Aeronáutica de Portugal*

Achievements

- Technical meetings solidify projects parameters
- Preparation and almost completion of the technical documents:
  - *Joint Test Protocol* (JTP)
  - *Potential Alternative Report* (PAR)
- Construction of a *Field Evaluation Test Plan* ➜ outlines what has to be done and by whom

Next Steps

- Complete the technical documents
- Laboratory and field testing

Client Representative ➡ Portuguese Air Force

Application of Alternatives on Aircraft (F16)

Future Goal

Reduce and Eliminate all the Environmental, Safety and Health risks associated with the use of Hexavalent Chrome, through different systems and process, using partial or total non-chrome technologies

Start with new P2 Projects